

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. After amending the claims as set forth above, claims 1-3, 6-13, and 16-20 are now pending in this application.

Applicant wishes to thank the Examiner for the careful consideration given to the claims.

Rejection of claims 10-13 and 16-18 under 35 U.S.C. 101

Claims 10-13 and 16-18 are rejected under 35 U.S.C. 101 because the PTO asserts that the claims must have either physical transformation and/or a useful, concrete and tangible result. This rejection is traversed for at least the following reasons.

At the onset, it should be noted that method claims 10-13 and 16-18 claim a physical process, which falls within the statutory categories enumerated in 35 U.S.C. 101, i.e., a process. (See MPEP 2106.) The method claims are not made ineligible for patent protection by any of the judicial exceptions because the method claims are more than mere abstract ideas (such as mathematical algorithms), a natural phenomena, and laws of nature. Indeed, the method claims require physical manipulation of the semiconductor substrates and the measuring unit for thin-layer micrometrology to carry out the steps of the method claims, which do not naturally occur and are not laws of nature. For example, the substrates are transferred out of at least one cassette element to a measurement unit for thin-layer micrometrology and guided past a measurement unit for thin-layer macrometrology, and the measurement unit for thin-layer micrometrology adjusts to the one or more identified measurement locations.

The PTO asserts that claims must have either physical transformation and/or a useful, concrete and tangible result. This assertion is not entirely correct because the claims must have either physical transformation and/or a useful, concrete and tangible result if they fall within one of the judicial exceptions (abstract idea, natural phenomena, or law of nature). Because the method claims do not fall within the judicial exceptions, the requirements of physical transformation and/or a useful, concrete, and tangible result are not necessary. Regardless, because the substrates and the measuring unit for thin-layer micrometrology are being physically manipulated (i.e., moved), a transformation of the physical world takes

place. Furthermore, tangible results are being achieved with the method because an image of an entire surface of the substrate in the measurement unit for thin-layer macrometrology is acquired; one or more measurement locations on the semiconductor substrates that indicate one or more defects that must be examined more closely are determined; and a detailed measurement of the one or more defects with the measurement unit for thin-layer micrometrology is performed. The assertion by the PTO that “performing a detailed measurement” would not appear to be sufficient to constitute a tangible result is error because the step of “performing a detailed measurement of the defect” would provide information regarding one or more defects in a substrate, which is a useful, tangible, and concrete result for application of quality inspection, which is self-evident to one skilled in the art. Accordingly, claims 10-13 and 16-18 meet the requirements of 35 U.S.C. 101 because these claims claim a physical process not found in nature, and is not merely a law of nature, and the method claims provide a physical transformation and a useful, concrete, and tangible result.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claims 1-2, 6, and 9 based on Birkner ‘698 and Nikoonahad

Claims 1-2, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0051698 (“Birkner ‘698”) in view of U.S. Patent 6,919,957 (“Nikoonahad”). For at least the following reasons, this rejection is traversed.

Claim 1 (as amended) recites “a measurement unit for thin-layer macrometrology, wherein the measurement unit for thin-layer macrometrology is positioned in a region of the transport mechanism, after the cassette element and before the first measurement unit for thin-layer micrometrology so that the semiconductor substrates are transported from the cassette element beneath the measurement unit for thin-layer macrometrology to the first measurement unit for thin-layer micrometrology, wherein the measurement unit for thin-layer macrometrology is configured such that an image of an entire surface of the substrate is acquired.” The at least one measurement unit for thin-layer macrometrology of claim 1 is provided on the path from the cassette element to the measurement unit for thin-layer micrometrology. The measurement unit for thin-layer macrometrology is arranged such that the semiconductor substrates are transported past or beneath the measurement unit for thin-

layer macrometrology. Birkner '698, Nikoonahad, or any combination thereof fails to teach or suggest this combination of features.

Birkner '698 discloses an apparatus for transporting and inspecting substrates but does not teach or suggest that any inspection and/or imaging is done during the transport from the load port to the workstation, i.e., while the substrate is being conveyed on the substrate conveying module 1. Indeed Birkner '698 merely teaches the use of two work stations and a substrate conveying module 1 located between them. Nikoonahad does not cure this deficiency because this reference merely discloses a unit for inspecting the thin film characteristic of a specimen. Accordingly, claim 1 is not rendered unpatentable over Birkner '698 and Nikoonahad.

Claims 2, 6, and 9 depend from and contain all the features of claim 1, and are allowable therewith for at least the same reasons as claim 1, without regard to the further patentable features contained therein.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claims 3 and 7 based on Birkner '698, Nikoonahad, and Birkner '999

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birkner '698 and Nikoonahad in view of U.S. Patent Application Publication 2002/0095999 ("Birkner '999"). Claims 3 and 7 depend from and contain all the features of claim 1. As previously mentioned, any combination of Birkner '698 and Nikoonahad does not teach or suggest all the features of claim 1, particularly "wherein the measurement unit for thin-layer macrometrology is positioned in a region of the transport mechanism, after the cassette element and before the first measurement unit for thin-layer micrometrology so that the semiconductor substrates are transported from the cassette element beneath the measurement unit for thin-layer macrometrology to the first measurement unit for thin-layer micrometrology." Birkner '999 does not cure these deficiencies. Thus, claims 1, 3, and 7 are not rendered unpatentable over the prior art. For at least this reason, favorable reconsideration of the rejection is respectfully requested.

Rejection of claim 8 based on Birkner '698, Nikoonahad, Birkner '999, and Kato

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Birkner '698, Nikoonahad, and Birkner '999 in view of U.S. Patent 6,241,456 ("Kato"). Claim 8 depends from and contain all the features of claim 1. As previously mentioned, any combination of Birkner '698 and Nikoonahad does not teach or suggest all the features of claim 1, particular "wherein the measurement unit for thin-layer macrometrology is positioned in a region of the transport mechanism, after the cassette element and before the first measurement unit for thin-layer micrometrology so that the semiconductor substrates are transported from the cassette element beneath the measurement unit for thin-layer macrometrology to the first measurement unit for thin-layer micrometrology." Birkner '999 does not cure these deficiencies.

In relation to Kato, the PTO asserts that "it would be obvious...to have the substrate guidable beneath the macroinspection [as disclosed by Kato] in order to properly inspect the wafer surface for defects." (Paragraph 7 of the Office Action.) However, Kato merely discloses a wafer pickup/return arm 5 to transfer a wafer 8 from a cassette 4 to an inspection unit 2. (see FIG. 3 of Kato.) Indeed, a wafer 8 is taken from the cassette 4, inspected by the inspection unit 2, and returned to the cassette 4 without any additional imaging. (See FIG. 3 of Kato.) Kato does not teach or suggest the inspecting and/or imaging carried out during the transport from the cassette 4 to the inspection unit 2. In addition, even though Kato teaches the use of two inspection units 2 and 3, there is no teaching or suggestion that the wafer pickup/return arm 5 could be used as a conveying means between the two inspection units 2 and 3. Accordingly, there is no teaching or suggestion by Kato to motivate one with ordinary skill in the art to use the wafer pickup/return arm 5 as the substrate conveying module 1 to transfer a substrate between the two workstations of Birkner '698. Because Kato does not teach or suggest the inspecting and/or imaging carried out during the transport of the wafer from the cassette to the inspection unit and there is no teaching or suggestion that the wafer pickup/return arm of Kato can be used as the conveying module 1 between two workstations, Kato does not cure the deficiencies of Birkner '698, Nikoonahad, and Birkner '999. Thus, claim 8 is allowable over the prior art.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claims 10-13, 16, and 18 based on Birkner '698, ADPA, and Nikoonahad

Claims 10-13, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birkner '698 in view of Applicant's Disclosure of the Prior Art ("ADPA") and Nikoonahad.

Claim 10 (as amended) recites "transferring semiconductor substrates out of at least one cassette element to a measurement unit for thin-layer micrometrology using a transport mechanism provided between the cassette element and the measurement unit for thin-layer micrometrology, the semiconductor substrates being guided past a measurement unit for thin-layer macrometrology during transport to the measurement unit for thin-layer micrometrology." Birkner '698, ADPA, and Nikoonahad, or any combination thereof fails to teach or suggest this combination of features. As previously mentioned, Birkner '698 and Nikoonahad do not teach or suggest any inspection and/or imaging done during the transport from a cassette element to a measurement unit for thin-layer micrometrology. ADPA does not cure these deficiencies. For at least these reasons, claim 10 is not rendered unpatentable over the prior art.

Claims 11-13, 16, and 18 depend from and contain all the features of claim 10, and are allowable therewith for at least the same reasons as claim 10, without regard to the further patentable features contained therein.

For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Rejection of claim 17 based on Birkner '698, ADPA, Nikoonahad, and Birkner '999

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Birkner '698, ADPA, and Nikoonahad in view of Birkner '999. Claim 17 depends from and contains all the features of claim 10. As previously mentioned, any combination of Birkner '698, ADPA, and Nikoonahad does not teach or suggest all the features of claim 10, particular "transferring semiconductor substrates out of at least one cassette element to a measurement unit for thin-layer micrometrology using a transport mechanism provided between the cassette element and the measurement unit for thin-layer micrometrology, the semiconductor substrates being

guided past a measurement unit for thin-layer macrometrology during transport to the measurement unit for thin-layer micrometrology." Birkner '999 does not cure these deficiencies. Thus, claims 17 is not rendered unpatentable over the prior art. For at least these reasons, favorable reconsideration of the rejection is respectfully requested.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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